

04645.0862

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Of: Frysz et al.

For: Mismatched Compression Glass-To-Metal Seal

the specification of which is being transmitted herewith

Assistant Commissioner of Patents
Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT

Pursuant to 37 CFR 1.56

1. Applicants submit herewith patents, publications or other information of which they are aware, which they believe may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR 1.56.

The filing of this Information Disclosure Statement (IDS) shall not be construed as a representation that a search has been made (37 CFR 1.56(g)), an admission that the information cited is, or is considered to be material to patentability or that no other material information exists.

IDS For: Mismatched Compression Glass-To-Metal Seal
Inventor: Gan et al.

The filing of this IDS shall not be construed as an admission against interest in any manner (Notice of Jan. 9, 1992, 1135 O.G. 13-25, at 25).

2. Attached is Form PTO-1449. Legible copies of all items listed accompany this IDS.

3. A concise explanation of the possible relevance of the listed information items is as follows:

Patents:

U.S. No. 3,225,132 to Baas et al. describes a glass-to-metal compression seal with a ferrule ring 1 having a higher coefficient of thermal expansion than the glass 3, and a pin 2 substantially matched with the glass. In particular, the ferrule ring is of a metal having a coefficient of linear expansion of approximately 25×10^{-7} per °C larger than that of the glass 3. The ferrule ring is manufactured from steel having a coefficient of expansion of 120×10^{-7} per °C between 30° and 300°C while conductor 2 consists of nickel-iron having a coefficient of expansion of 95×10^{-7} per °C between that temperature range. The glass member has a coefficient of expansion which is approximately 90×10^{-7} per °C between 30°C and 300°C.

U.S. Patent No. 4,053,692 to Dey pertains to hermetically sealed cells having a tantalum tube current collector 112 insulated from a stainless steel can having a larger coefficient of expansion than that of the tantalum tube thereby providing a compression seal. The coefficient of

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expansion of the glass member may be somewhat greater or somewhat less than the coefficient of expansion of the conductor 112.

U.S. Patent No. 4,436,955 to Kyle relates to a terminal assembly comprising a terminal pin 14 insulated from a ferrule 12 by alternating first and second layers of an insulating material. The second insulating material layers 30, 32 and 34 have a coefficient of thermal expansion matched to those of the ferrule 12 and the terminal pin 14.

U.S. Patent No. 4,587,114 to Kellerman et al. describes a hermetic glass-to-metal seal of the compression type in which a central metal eyelet is sealed to a conductor. The eyelet has a coefficient of expansion characteristic compatible with glass in which the eyelet is made non-ferromagnetic to eliminate unwanted induction heating and losses in a pulsatory current carrying operation. For example, the eyelet is of Hastelloy B having a coefficient of thermal expansion of about $100 \text{ cm/cm} \times 10^{-7} / ^\circ\text{C}$ bonded to glasses such as Corning 9013 and 9010 which have thermal coefficient's of expansion of about $95 \text{ cm/cm} \times 10^{-7} / ^\circ\text{C}$.

U.S. Patent No. 4,421,947 to Kyle teaches the use of hermetic seals for pacemaker applications.

U.S. Patent No. 4,430,376 to Box pertains to a compression seal wherein the case 10 has a high coefficient of thermal expansion, the pin 11 has a low coefficient of thermal expansion, and the intermediate seal 12 has a low or intermediate coefficient of thermal expansion.

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4. The remaining patents on the attached Form PTO 1449 were located during a patentability search.

5. The person making this statement is the agent who signs below, who makes this statement on the information supplied by the inventors and the information in the agent's file.

Respectfully submitted,

By:



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DATE May 2, 2001